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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/750,557	12/31/2003	Allen W. Bettner	42P17641	5707
59796	7590	05/02/2007	EXAMINER	
INTEL CORPORATION c/o INTELLEVATE, LLC P.O. BOX 52050 MINNEAPOLIS, MN 55402			A, MINH D	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/750,557	BETTNER ET AL.	
Examiner	Art Unit		
Minh D. A	2821		

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

1)  Responsive to communication(s) filed on 16 February 2007.

2a)  This action is **FINAL**.                            2b)  This action is non-final.

3)  Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## **Disposition of Claims**

4)  Claim(s) 1-9, 11-27 and 29-33 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

5)  Claim(s) 32 and 33 is/are allowed.

6)  Claim(s) 1-9, 11-17, 20-27, 31 is/are rejected.

7)  Claim(s) 18, 19, 29 and 30 is/are objected to.

8)  Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

9)  The specification is objected to by the Examiner.

10)  The drawing(s) filed on \_\_\_\_\_ is/are: a)  accepted or b)  objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)  The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)  Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a)  All    b)  Some \* c)  None of:  
1.  Certified copies of the priority documents have been received.  
2.  Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3.  Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1)  Notice of References Cited (PTO-892)  
2)  Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3)  Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_

4)  Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_ .

5)  Notice of Informal Patent Application (PTO-152)

6)  Other: \_\_\_\_ .

**DETAILED ACTION**

1. Applicant's communication filed on 2/16/07 has been carefully considered by the examiner. The arguments advanced therein are persuasive with respect to the rejections of record, and those rejections are accordingly withdrawn. In view of a further search, however, a new rejection is set forth below. This action is not made final.

***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-6, 9, 11-14 are rejected under 35 U.S.C. 102(e) as being unpatentable by McKinzie, III et al. (Patent No.: US 6, 906, 674).

Regarding claim 1, McKinzie discloses, in figures 1-2, an aperture antenna having a high impedance backing comprising a skin of a computing device (high impedance (122), the skin (conductive member (102))) comprising a conductive material (figure 2, col.4, lines 50-64)', and a slot (aperture (104)), notice that, the slot is aperture (104) in the skin (102), the slot (104) comprising a slot antenna (aperture antenna) and an impedance plane (AMCC and conductive ground

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plane (16)) to the skin (102) under the slot(104). Co.3, lines20-67 to col.8, lines 1-37.

Regarding claim 2, Mckinzie discloses, in figures 1-2, the conductive material (AMC) comprises an outer layer of the skin (conducitve member (102) having a metallic coating or metallic layer on col.4, lines 51-67) in at least of vicinity of the slot (104).

Regarding claims 3-4, Mckinzie discloses, in figures 1-2, the outer layer comprises one of a conductive coating and a conductive metal. Col.4, lines 51-67)

Regarding claim 5, Mckinzie discloses, in figures 1-2, the slot (104) extends through both the skin (102) and the conductive layer.

Regarding claim 6, Mckinzie discloses, in figures 1-2, the skin is made entirely of the conductive material (See the conductive member having a both side of conductive, col.4, lines 51-67).

Regarding claim 9, Mckinzie discloses, in figures 1-2, a cavity behind the slot (104), the cavity having a depth of approximately one quarter of a wavelength of a resonant frequency of the slot antenna (aperture antenna ). Col.1, lines 26-44.

Regarding claim 11, Mckinzie discloses, in figures 1-2, the impedance plane comprises an Artificial Magnetic Conductor (AMC).

Regarding claim 12, Mckinzie discloses, in figures 1-2, wherein the impedance plane comprises a multiple band impedance plane, said multiple

band impedance plane to act as a magnetic conductor for a primary resonant frequency and a secondary resonant frequency of the slot.

Regarding claims 13-14, Mckinzie discloses, in figures 1-2, the skin of a computing device, said skin comprising a conductive material; and a slot in the skin, said slot comprising a slot antenna, wherein the slot antenna has a primary resonant frequency and a secondary resonant frequency. Co.3, lines20-67 to col.8, lines 1-37.

4. Claims 16-17, 20, 24 are rejected under 35 U.S.C. 102(e) as being unpatentable by Asano et al (Pub.No: US 2002/0021250).

Regarding claim 16, Asano discloses, in figures 3-4 and 20 a display device, computer terminal and antenna comprising: a skin of a computing device, said skin(RF shielding foil (208) comprising a conductive material; a slot ( 200 and 201)in the skin, said slot comprising a slot antenna (202, 203)(page 8, paragraph [0133] to paragraph [0136], wherein at least one of a thickness of the skin in a vicinity of the slot, a width of the slot, a length of the slot, and a tuning element ( impedance match) a feed point of the slot are tuned to achieve at least one of a target impedance and a primary resonant frequency of the slot. Page 5, paragraph [0091], lines 1-21.

Regarding claim 17, Asano discloses, in figures 3-4 and 20 a display device having a skin (208) of a computing device, said skin (208) comprising a conductive material; and a slot(200, 201) in the skin, said slot comprising a slot antenna (202, 203), wherein the slot antenna(202 comprises a sector slot

antenna having a directional radiation pattern. Page 4, paragraph [0079] to page 8, paragraph [0135], lines 1-15.

Regarding claim 20, Asano discloses, in figures 3-4 and 20, the sector slot antenna has the directional radiation pattern for multiple resonant frequency bands. Page 4, paragraph [0079] to page 8, paragraph [0135], lines 1-15.

Regarding claim 24, Asano discloses, in figures 3B, 3C, 3E and 3F, 17C and 17E: a notebook computer; a skin (208) covering at least a portion of the notebook computer, said skin comprising a conductive material; and a slot in the skin, said slot comprising a slot antenna, wherein the slot antenna comprises a sector slot antenna having a directional radiation pattern. Page 4, paragraph [0079] to page 8, paragraph [0135], lines 1-15.

#### ***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 7 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over McKinzie, III et al. (Patent No.: US 6, 906, 674) in view of Flint et al ( Patent No: US 6, 339, 400).

Regarding claim 7, McKinzie discloses, in figures 1-2, the aperture antenna having a high impedance backing.

Mckinzie does not disclose that, the computing device comprises one of a laptop computer.

Flint discloses, in figures 3-4, that, the computing device comprises one of a laptop computer.

It would have been an obvious to one of ordinary skill in the art at the time the invention was made to employ a laptop computer such as suggested by Flint in the aperture antenna of McKinzie, III in order to performance a wireless for laptop computer, since such a combination of the laptop computer would create the wireless communication without wired connection.

Regarding claim 23, Mckinzie discloses, in figures 1-2, the aperture antenna having a high impedance backing and first slot antenna and second slot antenna.

Mckinzie does not disclose that, a second slot antenna in the skin, said first slot antenna and said second slot antenna comprising a diversity antenna.

Flint discloses, in figures 3-4, that, the computing device comprises a first slot antenna and said second slot antenna comprising a diversity antenna. Col.1, lines 20-35.

It would have been an obvious to one of ordinary skill in the art at the time the invention was made to employ the diversity antenna such as suggested by Flint in the aperture antenna of McKinzie, III in order to performance a wireless communications, since such a combination of the diversity of antenna would create the wireless communication without wired connection and provide antenna polarization diversity depending on the antenna design used.

7. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Flint et al (Patent No: US 6, 339, 400).

Regarding claim 8, Flint et al discloses, in figures 3-4 and 13, integrated antenna for laptop applications comprising: a skin (RF shielding foil (140) of a computing device, the skin (140) comprising a conductive material; a slot (130, 131) in the skin(140), the slot (130, 131) comprising a slot antenna (132, 133), wherein the computing device comprises at least one of a base and a lid. Col.3, lines 25-41.

Flint does not disclose that, the slot is located in at least one of an edge of the base, an edge of the lid, an outside of the lid, an inside of the lid, through the lid, and through the base.

This difference is not of patentable merit since (base and lid) and the slot is located in at least one of an edge of the base, an edge of the lid, an outside of the lid, an inside of the lid, through the lid, and through the base are operated in the same manner, provide many advantages such as smaller antenna size, low manufacturing costs and compatibility with standard laptop display and reliable performance. Therefore, to employ the slot is located in at least one of an edge of the base, an edge of the lid, an outside of the lid, an inside of the lid, through the lid, and through the base in the laptop of Flint, upon a particular application or environment or different location of use, would have been deemed obvious to a person skilled in the art.

8. Claims 21-22 is rejected under 35 U.S.C. 103(a) as being unpatentable over McKinzie, III et al. (Patent No.: US 6, 906, 674) in view of Chen ( Patent No: US 6, 452,551).

Regarding claims 21-22, Mckinzie discloses, in figures 1-2, the aperture antenna having a high impedance backing and first slot antenna and second slot antenna.

Mckinzie does not disclose that, a stub capacitor for tuning element coupled to the slot, said tuning element to tune a secondary frequency for the slot antenna.

It would have been an obvious to one of ordinary skill in the art at the time the invention was made to employ the stub capacitor as suggested by Chen in the aperture antenna of McKinzie, III in order to provide the stub capacitor coupled to the slot and the capacitor for tune a secondary frequency for the slot antenna, since such a combination of the stub capacitor would suitable for two different frequency.

9. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over McKinzie, III et al. (Patent No.: US 6, 906, 674) in view of Flint et al (Pub. No US 2002/0190905 A1).

Regarding claim 15, Mckinzie discloses, in figures 1-2, the aperture antenna having a high impedance backing.

Mckinzie does not disclose that, the computing device comprises the two wireless communications standards comprise at least one of Bluetooth, 802.11 a, 802.11 b, and 802.1 lg.

Flin discloses the two wireless communications standards comprise at least one of Bluetooth, 802.11a. Paragraph [0005] to paragraph [0006].

It would have been an obvious to one of ordinary skill in the art at the time the invention was made to employ the two wireless communications standards comprise at least one of Bluetooth, 802.11a as suggested by Flint in the aperture antenna of McKinzie, III, since it is desirable to use at least one of Bluetooth, 802 that are well suited for intended use.

10. Claims 25-27 are rejected under 35 U.S.C. 103(a) as being unpatentable by Asano et al (Pub.No: US 2002/0021250).in view of McKinzie, III et al. (Patent No.: US 6, 906, 674).

Regarding claims 25-27, Asano discloses the slot and slot antenna.

Asan does not disclose a cavity behind the slot, said cavity having a depth of approximately one-quarter of a wavelength of a resonant frequency of the slot antenna and an impedance plane coupled to the skin under the slot and the impedance plane comprises an Artificial Magnetic Conductor (AMC).

Mckinzie discloses, in figures 1-2, an aperture antenna having a high impedance backing comprising a skin of a computing device (high impedance (122), the skin (conductive member (102))) comprising a conductive material (figure 2, col.4, lines 50-64)', and a slot (aperture (104), notice that, the slot is aperture (104)) in the skin (102), the slot (104) comprising a slot antenna (aperture antenna) and an impedance plane (AMCC and conductive ground plane (16)) to the skin (102) under the slot (104) and a depth of approximately one-quarter of a wavelength of a resonant frequency of the slot antenna.

It would have been an obvious to one of ordinary skill in the art at the time the invention was made to employ a cavity behind the slot, said cavity having a depth of approximately one-quarter of a wavelength of a resonant frequency of the slot antenna and an impedance plane coupled to the skin under the slot and the impedance plane comprises an Artificial Magnetic Conductor (AMCC) as suggested by the aperture antenna of McKinzie, III in the computer terminal and antenna of Asano, since it is desirable to use AMCC, impedance plane and one quarter of a wavelength, that are well suited for intended use.

***Allowable Subject Matter***

11. Claim 32 is allowed.
12. Claims 18-19, 29-30 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Prior art does not teach that, the sector slot antenna comprises a first sector slot antenna in a sector antenna system, said sector antenna system further comprising: a second sector slot antenna in the skin, said second sector slot antenna having a directional radiation pattern in a different direction than the first sector slot antenna recited in dependent claim 18.

Prior art does not teach that, the sector slot antenna comprises a first sector slot antenna in a sector antenna system, the apparatus further comprising: a plurality of additional sector slot antennas in the skin, each of the plurality of additional sector slot antennas having a directional radiation pattern covering a different sector surrounding computing device recited in dependent claim 19.

The prior art does not teach that, a skin of a computing device, said skin comprising a conductive material', a first slot in the skin, said first slot comprising a first sector slot antenna having a radiation pattern in a first direction', a second slot in the skin, said second slot comprising a second sector slot antenna having a radiation pattern in a second direction', a third slot in the skin, said third slot comprising a third sector slot antenna having a radiation pattern in a third direction', and a fourth slot in the skin, said fourth slot comprising a fourth sector slot antenna having a radiation pattern in a fourth direction recited in independent claim 32.

***Citation of relevant prior art***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Ikegaya et al(US 6,847,329) and Casarez et al. (US 5,913,174) are cited to show a slot antenna.

***Inquiry***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Minh Dieu A whose telephone number is (571) 272-1817. The examiner can normally be reached on M-F (5:30 AM-2:45 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Callahan can be reached on (571) 272-1740. The fax phone number for the organization where this application or

proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Examiner

Minh A

Art Unit 2821

4/29/07

*shih-chao chen*  
SHIH-CHAO CHEN  
PRIMARY EXAMINER